

REMARKS

Following up on the outstanding Final Office Action as well as an Advisory Action which issued May 5, 2006 in response to Amendment C previously filed March 22, and a follow up telephone interview with the Examiner on April 4, the limitation of claim 20 has been incorporated into claim 19. Claim 20 has been canceled hereby. In the Advisory Office Action the Examiner indicated that claim 20 contained allowable subject matter.

Further by the Amendment, claim 32 has been amended by incorporating the limitation of claim 33 therefrom. Claim 33 has been canceled. Claim 32 now requires:

"The plurality of substantially identical, pre-set pre-emphasis modules."
(pending claim 32, 34-37)

Each of the modules are recited in claim 32:

"establishes a predetermined gain profile, and couples a plurality of optical signals the gain of which is adjusted in accordance with the predetermined profile, to an input of one of the links associated with the one element, the module being useable to limit incoming optical signals to be predetermined input range used with up to a predetermined number of optical links determined at, at least in part, by the common input range" (pending claim 32, 34-37)

As noted above, now allowable claim 19 requires that:

"the laser modules each have substantially the same power output profile"
(pending claim 19)

It is submitted that amended claim 32, as well as associated dependent claims 34-37 are allowable for the same reasons that claim 20, the limitation of which has now been incorporated in to claim 19, is also allowable. None of the prior art of record, including Sundlein and Wilner taken alone or in combination suggest, disclose or make obvious the structure of amended claim 32.

In the Advisory Action the Examiner stated:

"Regarding claim 33, it is well known and a widely practice [sic] in the art to use a plurality of substantially identical pre-emphasis module in an optical system in order to reduce the cost for spare parts." (Advisory Action page 2)

However, the above statement fails to address the entirety of the limitations of claim 33, now incorporated into claim 32, some of which are noted above. No suggestion, motivation or teaching has been identified in either Sundlein or Wilner which would motivate one of skill in the art to modify Sundlein so as to make claim 33, the limitation of which has been incorporated into claim 33, obvious. More particularly, as amended claim 32 requires a:

"plurality of substantially identical, pre-set pre-emphasis modules"

Each of the modules:

"establishes a predetermined gain profile, and couples a plurality of optical signals the gain of which is adjusted in accordance with the predetermined profile, to an input of one of the links associated with the one element, the module being usable to limit incoming optical signals to the predetermined input range when used with up to a predetermined number of optical links determined, at least in part, by the common input range" (pending claims 32, 34-37)

Thus for at least the above reasons pending claims 32, 34-37 are also allowable.

On page 2 of the Office Action the Examiner rejected claims 32-37 due to an alleged indefiniteness. It is submitted, as explained below, that one of ordinary skill in the art would clearly understand the meaning of pending claims 32, 34-37 and that such provide the requisite degree of definiteness required pursuant to 35 USC § 112 ¶2. It is axiomatic that the claims are to be read by those of ordinary skill in the art in light of the specification and figures. Relative to the "predetermined gain profile" referred to in pending claims 32, 34-37 the Examiner is directed to the following portions of the pending specification and the relevant figures:

"A method that embodies the invention includes the steps of:

- establishing a gain profile, across a range of wavelengths, on a per span basis;
- forming an inverse of the gain profile;
- establishing the widest acceptable receiver input power variation

- and determining a maximum number of allowable cascaded spans;
 - raising the inverse of the gain profile to an exponent which corresponds to the maximum allowable number of spans to form a processed inverse profile; and
 - setting one of laser power or optical filter characteristic, on a per-channel basis, in accordance with the processed inverse profile."
- (page 5 specification, lns. 7-17)

"As will be understood by those of skill in the art, the gain elements 14a,b associated with a respective span, such as span 16-1, will exhibit representative gain profiles as illustrated in Fig. 2. Such gain elements can be represented as a single composite gain element with respect to signals transmitted through a respective span, such as span 16-1." (Page 6, Specification 3rd full paragraph, Detailed Description)

"The output power profile for the plurality of transmitters 24 is established, on a per-channel basis, using pre-emphasis circuits 28. Circuits 28 can be set at manufacture. The combination of circuits 28 and transmitters 24 can be configured as one of a plurality of modules 30 installable in optical networks, such as 20. As discussed in more detail subsequently, n field adjustments are necessary when adding a transmitter/pre-emphasis module, such as module 30 to a network such as network 20." (Last 2 lines, page 6, top 5 lines, page 7)

"In order to minimize gain variations, due to amplifier variations, as illustrated in Fig. 2, pre-emphasis circuits 28 set the output power profile of transmitters 24 in accordance with the inverse of the common, composite gain profile of the amplifiers associated with the spans 16-1,-2,-3...-S raised to a predetermined exponent. For example, and without limitation, where S equals 2, there are two composite gain elements between module 30 and receiver 32. Where S equals 4, there are four composite gain elements isn't he four spans.

Fig. 4 is an exemplary, composite plot of the inverse of the gain profile of a composite gain element which incorporates a power amplifier, such as 14a, and a preamplifier, such as 14b (having gain profiles as in Fig. 2) raised to the power

of 2. Where the pre-emphasis circuits 28 are adjusted in accordance with the profile of Fig. 4, gain variations, which otherwise multiply as signals travel through respective spans, S1, S2 of the network 20 can be eliminated. Similarly, where the value of S equals 4, pre-emphasis circuitry 28 can be set such that the power output profile of transmitters 24, on a per-channel basis, corresponds to the inverse of the composite gain profile raised to the fourth power. Once again, gain variations due to amplifier gain profiles can be minimized or eliminated in up to four spans." (Page 7, second and third full paragraph)

The above description, which refers to various of the figures, would make clear to one of ordinary skill in the art what "gain profile" that the claimed, modules establish. Further, that text makes clear how "the gain" of the signals "is adjusted in accordance with the predetermined profile" (Page 2 Office Action)

As is made clear by the above quotations, the "gain profile" referred to corresponds to:

"the inverse of the common, composite gain profile of the amplifiers associated with the spans 16-1,-2,-3,...-S raised to a predetermined exponent" (Specification, page 7 second full paragraph)

Further, the "gain" of the signals "is adjusted in accordance with the predetermined profile" as discussed on at least page 7 of the application wherein it is stated:

"In order to minimize gain variations, due to amplifier variations, as illustrated in Fig. 2, pre-emphasis circuits 28 set the output power profile of transmitters 24 in accordance with the inverse common, composite gain profile of the amplifiers associated with the spans 16-1,-2,-3...-S... Where the pre-emphasis circuits 28 are adjusted in accordance with the profile of Fig. 4, gain variations, which otherwise both apply as signals travel through respective spans S1, S2 of the network 20 can be eliminated. Similarly, where the value of S equals 4, pre-emphasis circuitry 28 can be set such that the power output profile of transmitters 24 on a per-channel basis, corresponds to the inverse of the composite gain profile raised to the fourth power. Once again, gain variations due to amplifier and gain

Appl. No. 10/075/067

Amendment D

Reply to Final Office Action mailed Dec. 22, 2005

profiles can be minimized or eliminated in up to four spans." (Specification page 7 second and third full paragraphs)

Thus, as explained above, claims 32, 34-37 do exhibit the level of definiteness required pursuant to 37 USC § 112 ¶ 2 when considered, as noted above, in view of the Specification and Figures of the application.

For at least the above reasons it is submitted that the application is allowable and allowance is respectfully requested.

Respectfully submitted,

Dated: April 20, 2006

By



Paul M. Vargo
Reg. No. 29,116
WELSH & KATZ, LTD.
120 South Riverside Plaza, 22nd Floor
Chicago, Illinois 60606
Phone: (312) 655-1500
Fax: (312) 655-1501